

DESCRIPTION

Demonstration circuit 972A is a high efficiency synchronous step-down DC/DC converter featuring the LTC3822EDD controller and dual N-Channel MOSFETs. The demo board is capable of providing 1.8V/8A from 2.75V to 4.5V input. The constant frequency current mode architecture with MOSFET V_{DS} sensing eliminates the need for a sense resistor and improves efficiency.

The maximum peak current sense threshold can be easily selected with the IPRG pin.

Switching frequency can be selected with JP1 to 300KHz, 550KHz or 750KHz.

Design files for this circuit board are available. Call the LTC factory.

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Table 1. Performance Summary ($T_A = 25^\circ\text{C}$)

PARAMETER	CONDITION	VALUE
Input Voltage Range		2.75V to 4.5V
V_{OUT}	$V_{IN} = 2.75\text{-}4.5\text{V}$, $I_{OUT} = 0\text{A to }8\text{A}$	1.8V $\pm 2\%$
Maximum load current I_{OUT}	$V_{IN} = 2.75\text{-}4.5\text{V}$, $V_{OUT} = 1.8\text{V}$	8A
Typical Output Ripple Voltage	$V_{IN} = 3.3\text{V}$, $I_{OUT} = 4\text{A}$, $F_s = 550\text{KHz}$ (20MHz BW)	12mV _{p-p}

QUICK START PROCEDURE

Demonstration circuit 972A is easy to set up to evaluate the performance of LTC3822. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below: (Initial jumper position JP1: 550KHz)

NOTE: When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. Measure the input or output voltage ripple by touching the probe tip directly across the Vin or Vout and GND terminals. See Figure 2 for proper scope probe technique.

1. With power off, connect the input power supply to Vin (2.75V-4.5V) and GND (input return).
2. Connect the 1.8V load between Vout and GND (Initial load: 0 A).

3. Connect the DVMs to the input and output.
4. Turn on the input power supply and check for the proper output voltage. Vout should be 1.8V \pm 2%.
5. Once the proper output voltage is established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage and other parameters.

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 972

LOW INPUT VOLTAGE SYNCHRONOUS STEP-DOWN CONVERTER

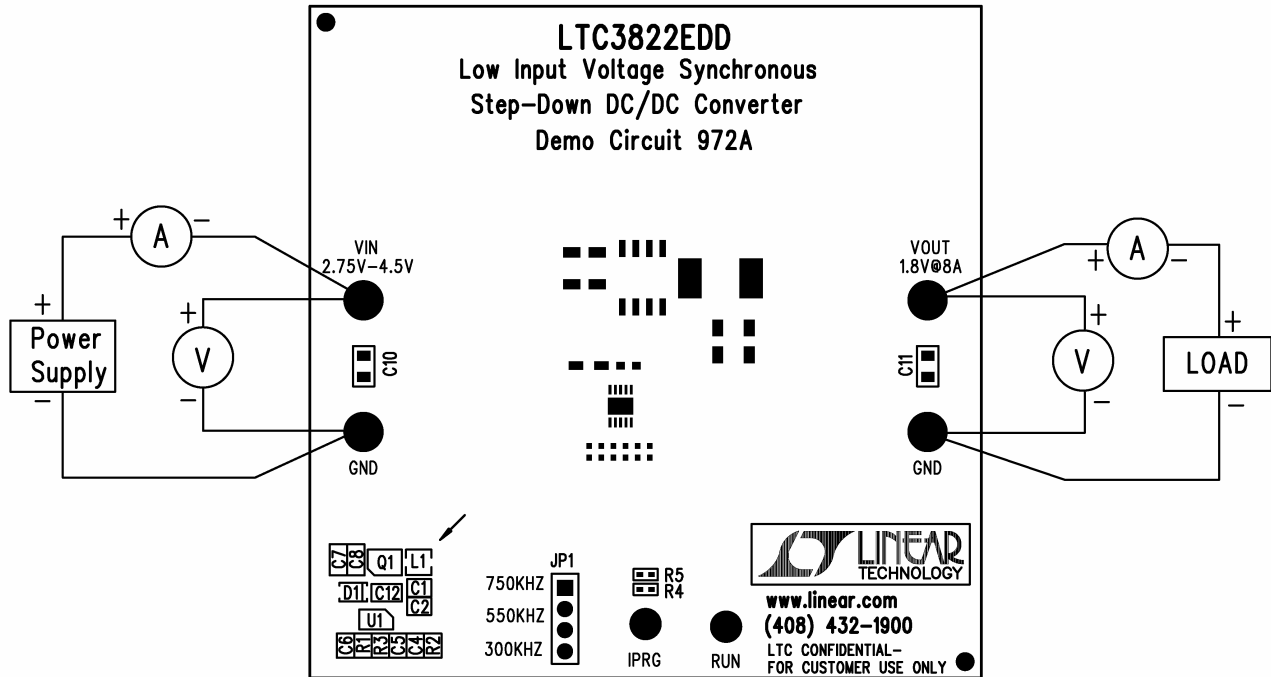


Figure 1. Proper Measurement Equipment Setup

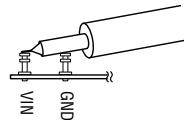


Figure 2. Measuring Input or Output Ripple

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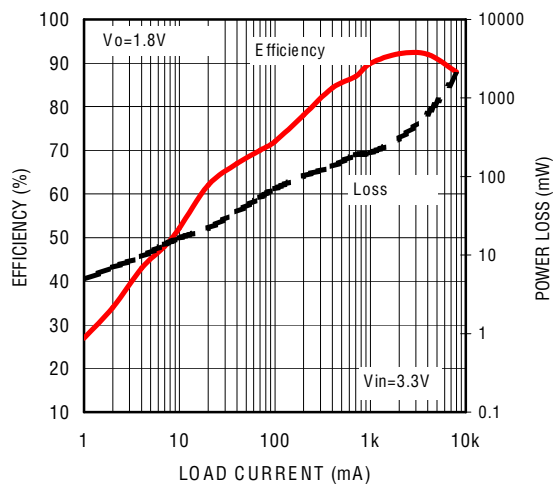
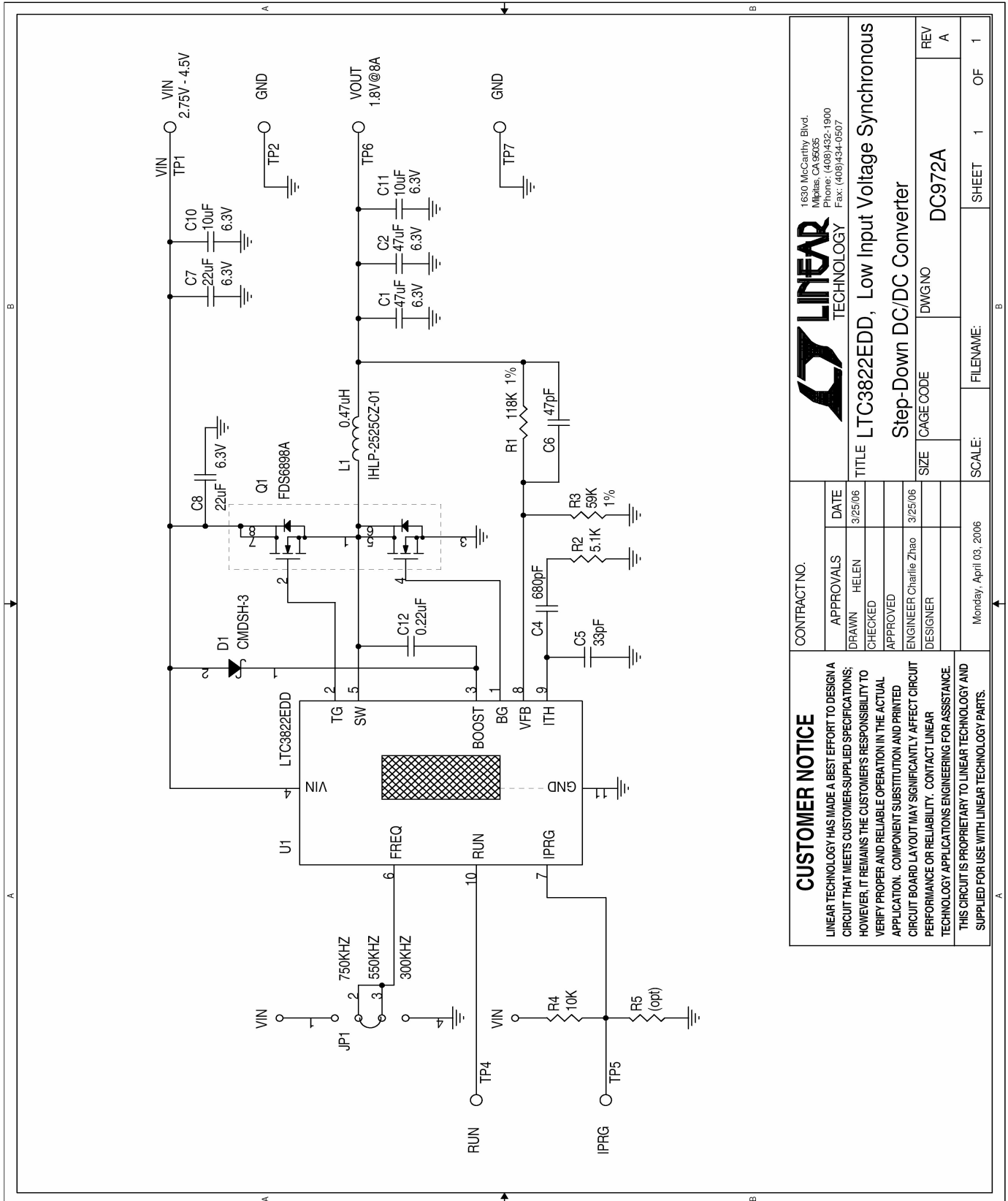


Figure 3. Efficiency and power loss vs load current (550KHz)

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LOW INPUT VOLTAGE SYNCHRONOUS STEP-DOWN CONVERTER



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THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.			
APPROVALS	DATE	TITLE LTC3822EDD, Low Input Voltage Synchronous Step-Down DC/DC Converter	
DRAWN HELEN	3/25/06	SIZE	DWGNO DC972A
CHECKED		CAGE CODE	
APPROVED		SCALE:	FILENAME:
ENGINEER Charita Zhao	3/25/06		
DESIGNER			
	Monday, April 03, 2006	SHEET	1 OF 1

